New approach to visualize 3 dimensional cancer cells

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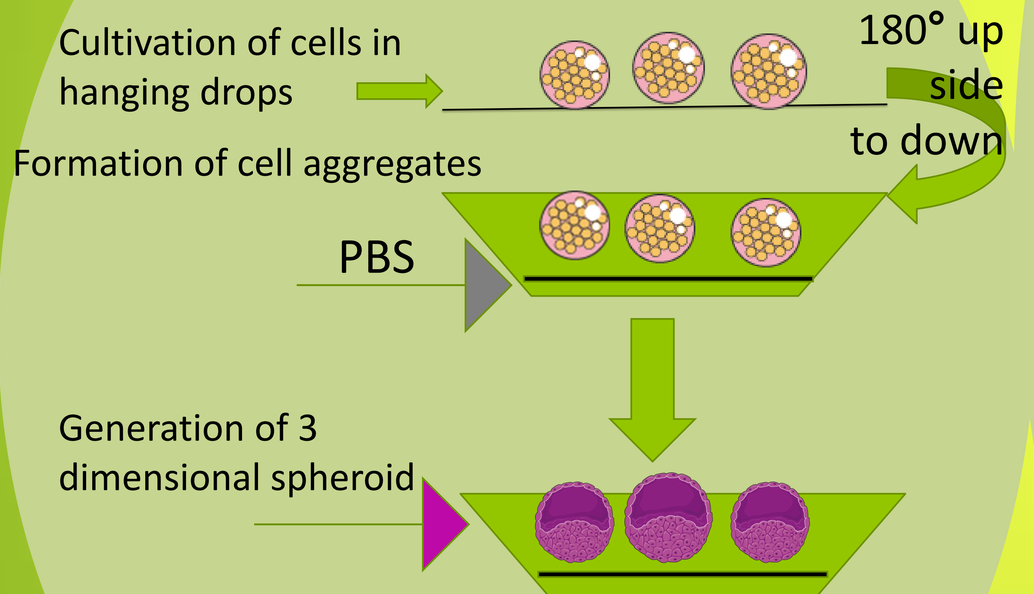
Introduction

Spheroids are 3D cancer cell models to mimic important properties of tumors such as a physical structure, physiological characteristics and gene expression patterns.
We visualized and provided morphological analysis of spheroid cell cultures using **MicroCT** in comparison to Fluorescence microscopy.

Methods

1.We used two different melanoma cancer cell lines:WM266 and WM115

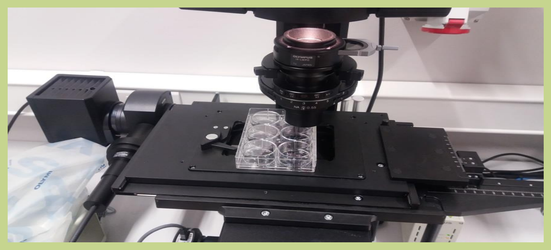
2.Formation of spheroid

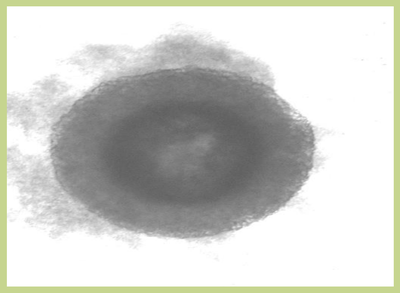


3.Evaluation of a growth rate and spheroid viability by using optical and Flourescence microscope
4. Evaluation of morphology and structure of spheroids by MicroCT.

Results

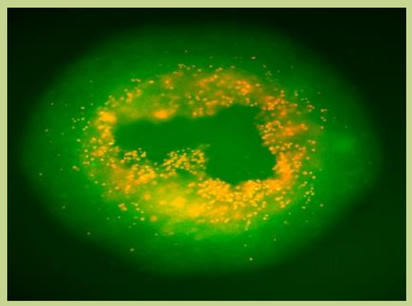
1.Spheroid diameter was changing depending on cell line, primary cell number and time of culturing.

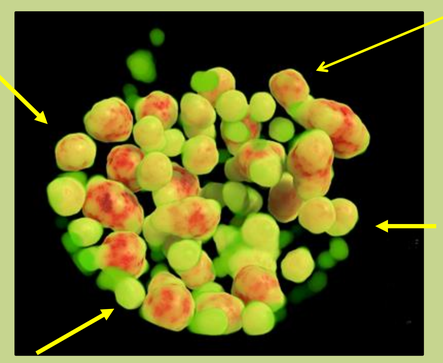




2.Fluorescent microscopy showed a red core zone with necrotic cells, which were positive for propidium iodide (PI) and a green viable outer region positive for fluorescein staining.

5 ml PBS
10 UL Calcein
5 ul PI
4 ul FDA





3. One spheroid visualized by **microCT**. Spheroid morphology confirmed cell clusters inside and the number of them is increasing within culturing.

Conclusion

Melanoma cell lines (WM266 and WM115) can be successfully cultured in 3D spheroids to substitute human and animal models in preclinical studies.MicroCT system allows to visualize the structure of spheroids with high resolution. These findings confirm utility 3D melanoma cell model for further application in molecular imaging.

References

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3.Leszczyński, B “Visualization of porcine eye anatomy by X-ray microtomography”. Exp.Eye Research 167: 51-55, 2018

Aknowledge

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